REMARKS

The specification and claims 1-2, 6, 10-11, and 13 have been amended. Claims 1-20 are pending in the case. Further examination and reconsideration of the presently claimed application are hereby respectfully requested.

Objection to Specification

An objection was lodged against the specification for failing to disclose all pertinent data of a copending application. In response thereto, page 21, lines 16-19, of the present specification have been amended to include the serial number and patent number of the referenced application. Therefore, Applicants respectfully request removal of this objection.

Section 112 Rejections

Claims 2 and 7 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Applicants respectfully traverse this rejection.

The Office Action states that "[i]ndependent claim 1 sets forth two separate subsystems coupled together. Claim 2, dependent from claim 1, calls for the two separate subsystems having common optics. There is no support for the two separate subsystems having common optics." (Office Action -- page 2). Claim 2 has been amended to recite in part:

> . . . wherein the inspection and review subsystems have common optics and one or more optical components that are not common to the inspection and review subsystems, and wherein the one or more optical components are replaced between inspection and defect review.

Support for the amendments to claim 2 can be found in the present specification, for example, on page 40, lines 8-14, and page 41, lines 1-25. One reasonably skilled in the art could make or use the invention recited in claim 2 based on the disclosure in the present patent application, including the portions of the specification cited above, coupled with information known in the art without undue experimentation. "The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988). MPEP 2164.01.

With respect to the rejection of claim 7, the Office Action states:

> There does not appear to be adequate disclosure for how the claimed inspection structure, with its two subsystems, can be used for the generation of the database comprising a reference image. The specification, page 48, lines 25-26 states that this can be done, but does not appear to include any disclosure of how it is to be done, or how the particular aspects of the invention as disclosed and claimed are to be used to accomplish this end. (Office Action -- page 2-3).

Applicant respectfully traverses this assertion. For instance, the present specification states that "[t]he image computer may also be configured to generate a database including such a reference image. The image computer may render the database, which may include one or more reference images, as described herein." (Specification -- page 48, lines 25-27). Description of how a database including one or more reference images can be rendered is provided in the specification, for example, on page 25, line 16 to page 27, line 25.

Therefore, the present specification provides adequate disclosure of how the claimed inspection structure, with its two subsystems, can be used for the generation of the database comprising a reference image. In particular, the specification includes disclosure of how the database can be generated and how the particular aspects of the invention as disclosed and claimed can be used to accomplish this end. As such, one reasonably skilled in the art could make or use the invention recited in claim 7 based on the disclosure in the present patent application, including the portions of the specification cited above, coupled with information known in the art without undue experimentation.

For at least the reasons set forth above, the originally filed specification contains a description of claims 2 and 7 such that one skilled in the art to which it pertains, or with which it is most nearly connected, can make and/or use the invention. As such, claims 2 and 7 comply with the enablement requirement. Accordingly, removal of this rejection is respectfully requested.

Claims 10 and 11 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Office Action states that "[c]laims 10 then adds that the defects are 'classified using the image data' either 'from the inspection substation or the review subsystem'. This alternative language is unclear." (Office Action -- page 3). Claims 10 and 11 have been amended for clarification. In particular, claim 10 has been amended to recite in part: "wherein the one or more functions comprise detecting the defects on the reticle using the image data from the inspection subsystem and classifying the defects using the image data from the review subsystem." In addition, claim 11 has been amended to recite in part: "wherein the one or more functions comprise detecting the defects on the reticle using the image data from the inspection subsystem and determining a root cause of the defects using the image data from the review subsystem." Therefore, the amendments to claims 10 and 11 remove the alternative language that the Office Action contends is unclear.

For at least the reasons set forth above, claims 10 and 11 are believed definite. Accordingly, removal of this rejection respectfully requested.

Section 102 Rejections

Claims 1 and 2 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,268,093 to Kenan et al. (hereinafter "Kenan"). Claims 1, 3, 5, 6, and 8 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,595,289 to Feldman et al. (hereinafter "Feldman"). This rejection is respectfully traversed. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP § 2131. The cited art does not disclose all limitations of the currently pending claims, some distinctive limitations of which are set forth in more detail below.

The cited art does not teach an inspection subsystem configured to form a first aerial image of the reticle, which can be used to detect defects on the reticle, using a set of exposure conditions that includes exposure conditions within a process window of an exposure system and a review subsystem coupled to the inspection subsystem and configured to form a second aerial image of the reticle, which can be used to analyze the defects. Amended independent claim 1 recites in part:

> . . . an inspection subsystem configured to form a first aerial image of the reticle using a set of exposure conditions, wherein the set of exposure conditions comprises exposure conditions within a process window of an exposure system, and wherein the first aerial image can be used to detect defects on the reticle; and a review subsystem coupled to the inspection subsystem, wherein the review subsystem is configured to form a second aerial image of the reticle, and wherein the second aerial image can be used to analyze the defects.

Independent claim 6 has been amended to recite similar limitations. Support for the amendments to claims 1 and 6 can be found in the present specification, for example, on page 5, lines 3-6.

Kenan discloses a method for reticle inspection using aerial imaging. For example, Kenan states that "The system for defect detection according to the present invention is composed of three main modules: (1) a scanner module; (2) a defect detection image processing hardware module; and (3) a post process and review station." (Kenan -- col. 5, lines 39-42). Kenan also states that "Preferably, the post process and review station is software-based and operates on a computer workstation." (Kenan -- col. 11, lines 2-4). Therefore, Kenan discloses a system for defect detection that includes one optical subsystem configured to form aerial images of a reticle. However, Kenan does not disclose an inspection subsystem coupled to a review subsystem, both of which are configured to form aerial images of a reticle. Therefore, Kenan does not teach an inspection subsystem configured to form a first aerial image of the reticle, which can be used to detect defects on the reticle, using a set of exposure conditions that includes exposure conditions within a process window of an exposure system and a review subsystem coupled to the inspection subsystem and configured to form a second aerial image of the reticle, which can be used to analyze the defects, as recited in claim 1. Consequently, Kenan does not teach all limitations of claim 1.

With respect to claim 2, the Office Action states:

> Kenan et al appears to show an optical system such as in shown in figures 1 and 2 of the instant specification. It appears what was intended in claim 2, and in claim 1 as a parent claim to claim 1, is the optical system of figures 1 and 2, with the 'inspection subsystem' and the 'review subsystem' being one and the same, with the 'first aerial image' being the same as the 'second aerial image', being formed by the same optics in the same place. (Office Action -- page 4).

However, claim 2 has been amended to recite in part: "wherein the inspection and review subsystems have common optics and one or more optical components that are not common to the inspection and review subsystems, and wherein the one or more optical components are replaced between inspection and defect review." Therefore, as recited in claim 2, although the inspection and review subsystems have common optics, one or more optical components that are not common to the inspection and review subsystems are replaced between inspection and defect review. As such, the amendments to claim 2 clarify that the inspection subsystem and the review subsystem are not one and the same and that the first and second aerial images are not the same since they are not formed by the same optics in the same place. Kenan does not teach an inspection subsystem and a review subsystem that have common optics and one or more optical components that are not common to the inspection and review subsystems and that are replaced between inspection and defect review, as recited in claim 2. Therefore, Kenan does not teach all limitations of claim 2.

Feldman discloses an inspection system utilizing dark-field illumination. For example, Feldman states that "all or virtually all of the light transmitted through the illuminated patterned areas of the mask 10 of FIG. 1 is collected…this collected light is focused onto standard photodetector arrays 32 and 34 which provide electrical output signals representative of the illuminated mask patterns." (Feldman -- col. 3, line 64 to col. 4, line 3). Therefore, Feldman discloses forming images of light transmitted through a mask. However, Feldman does not disclose forming such images using a set of exposure conditions that includes exposure conditions within a process window of an exposure system. As such, Feldman does not teach an inspection subsystem configured to form a first aerial image of the reticle, which can be used to detect defects on the reticle, using a set of exposure conditions that includes exposure conditions within a process window of an exposure system and a review subsystem coupled to the inspection subsystem and configured to form a second aerial image of the reticle, which can be used to analyze the defects, as recited in claims 1 and 6. Consequently, Feldman does not teach all limitations of claims 1 and 6.

For at least the aforementioned reasons, claims 1 and 6, as well as claims dependent therefrom, are not anticipated by the cited art. Accordingly, removal of this rejection is respectfully requested.

Section 103 Rejections

Claims 12-15 and 17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Feldman in view of "the prior art discussed in the specification." Claims 1 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,909,602 to Micka. (hereinafter "Micka"). This rejection is respectfully traversed. To establish *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974), MPEP 2143.03. Obviousness cannot be established by combining or modifying the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion or incentive to do so. *In re Bond,* 910 F.2d 81, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990). The cited art does not teach or suggest all limitations of the currently pending claims, some distinctive limitations of which are set forth in more detail below.

The cited art does not teach, suggest, or provide motivation for an inspection subsystem configured to form a first aerial image of the reticle, which can be used to detect defects on the reticle, using a set of exposure conditions that includes exposure conditions within a process window of an exposure system and a review subsystem coupled to the

inspection subsystem and configured to form a second aerial image of the reticle, which can be used to analyze the defects, as recited in claims 1 and 6. In particular, as set forth in detail above, Feldman does not teach all limitations of claim 6. In addition, Feldman does not suggest or provide motivation for forming images of light transmitted through a mask using a set of exposure conditions that includes exposure conditions within a process window of an exposure system. Therefore, Feldman does not suggest or provide motivation for all limitations of claim 6. Furthermore, the "prior art discussed in the Specification" cannot be combined with Feldman to overcome deficiencies contained therein.

Micka discloses an automatic visual inspection system for microelectronics. For example, Micka states that "FIG. 1 illustrates a system for inspecting a test chip 10 by shining light at it from a light source 12 and by detecting reflected light on a photo-detector 14." (Micka -- col. 2, lines 42-44). Therefore, Micka does not teach forming an aerial image of the test chip. In addition, Micka does not teach, suggest, or provide motivation for forming images of light transmitted through a mask using a set of exposure conditions that includes exposure conditions within a process window of an exposure system. Therefore, Micka does not teach, suggest, or provide motivation for an inspection subsystem configured to form a first aerial image of the reticle, which can be used to detect defects on the reticle, using a set of exposure conditions that includes exposure conditions within a process window of an exposure system and a review subsystem coupled to the inspection subsystem and configured to form a second aerial image of the reticle, which can be used to analyze the defects. Consequently, Micka does not teach, suggest, or provide motivation for all limitations of claim 1.

With respect to claim 17, the Office Action states:

> As to claims 17, it parent claim 16 calls for separate inspection and analyzing steps based upon two separate aerial images. Claim 17 claims that these two steps are performed 'substantially simultaneously'. However, it does not appear clear what is meant by this or how it is to be accomplished. Clearly if the reticle being inspected must be moved form one subsystem to the other to form the two aerial images, the analysis of the images will not normally be performed 'substantially simultaneously'. (Office Action -- page 6).

However, independent claim 16 recites:

> A method for inspecting a reticle, comprising: inspecting the reticle by forming a first aerial image of the reticle while the reticle is disposed in a system and detecting defects on the reticle using the first aerial image; and reviewing the defects by forming a second aerial image of the reticle while the reticle is disposed in the system and analyzing the defects using the second aerial image.

Therefore, claim 16 recites that a first aerial image and a second aerial image of a reticle are formed while the reticle is disposed in a system. However, claim 16 does not require that the reticle being inspected must be moved from one subsystem to the other to form the two aerial images. In addition, support for the limitations of claim 17 can be found in the present specification, for example, on page 41, line 27 to page 42, line 26. Therefore, it is clear what is meant by the limitations of claim 17 and how the limitations of claim 17 can be accomplished. Consequently, the analysis of the two aerial images may be performed substantially simultaneously as presently claimed. Furthermore, since claim 17 is dependent from claim 16, claim 17 is patentable over the cited art for at least the reasons that claim 16 was allowed, which are set forth on pages 7 and 8 of the Office Action.

For at least the reasons stated above, independent claims 1, 6, and 16, as well as claims dependent therefrom, are patentably distinct over the cited art. Accordingly, removal of this rejection is respectfully requested.

Allowable Subject Matter

Claims 16 and 18-20 were allowed. Claim 9 was objected to as being dependent upon a rejected base claim, but was deemed allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants appreciate the Examiner's indication of allowable subject matter and await allowance of the remaining claims in the case.

Information Disclosure Statement

Applicants note that the Information Disclosure Statement filed on January 5, 2005, and the references cited therein, have not been considered by the Examiner. Careful consideration of the references listed on the Form PTO-1449 of this Information Disclosure Statement and return of the signed form are respectfully requested.

CONCLUSION

This response constitutes a complete response to all issues raised in the Office Action mailed February 28, 2006. In view of the remarks presented herein, Applicants assert that pending claims 1-20 are in condition for allowance. If the Examiner has any questions, comments, or suggestions, the undersigned earnestly requests a telephone conference.

The Commissioner is authorized to charge any required fees or credit any overpayment to deposit account number 50-3268/5589-04101.

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